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EXAMINER	
WRIGHT, BRYAN F	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/516,966	PAILLES ET AL.	
	Examiner	Art Unit	
	BRYAN WRIGHT	2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 15-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13 and 15-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/03/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the original filing of July 29, 2005. Claim 14 is cancelled. Claims (1-13 and 15-25) are pending and have been considered below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-13, 15-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishiguro et al. (European Patent Application EP 0856821 and hereinafter Ishiguro (Reference cited from 1492)) in view of Barlow et al. (US Patent No. 2004/0215964 and Barlow hereinafter).

3. As to claim 1, Ishiguro teaches a **method for checking a digital signature, involving a microcircuit connectable to a data processing system, the microcircuit** (e.g. IC card) **being designed to receive requests to check digital signatures from the data processing system** [col. 7, lines 35-40], **and to process these requests, a digital signature being generated using a private key** (i.e., secret key pT and qT) **only known to a signatory entity** (i.e., Terminal) **and associated with a public key** (i.e., Terminal public key nT) [col. 5, lines 10-25], **said method comprising a step of storing a certificates table** (i.e., public key) **containing a digest form** (i.e., master public key nA) **of at least one public key in a memory** (i.e., pre-stored in IC Card) **in the microcircuit** (i.e., IC card) [col. 20, lines 22-33], **and a phase of checking** (i.e., verifying) **a digital signature** [col. 20, lines 25-27] **comprising steps of**:

receiving by the microcircuit (e.g. IC card) **a digital signature to be checked and a public key in a pair of keys comprising a private key that was used to generate the digital signature to be checked** (i.e., verify) [col. 9, lines 30-35], **calculating a digest form of the received public key** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]), **and decrypting** [i.e., decryption/par. 29, lines 10-20] **the digital signature using the received public key if the calculated digest form of the public key** (i.e., nA) **is located** (i.e., is Valid) **in the certificates table** (i.e. predetermine area, EEPROM).

However Ishiguro does not expressly teach:

and searching for the calculated digest form of the public key in the certificates table

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

and searching for the calculated digest form of the public key in the certificates table (to provide IC Card information management of secure storage [par. 56 – par. 57])

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of IC Card information management of secure storage disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 56 - par. 57].

4. As to claim 2, Ishiguro teaches a **method further comprising a phase of inserting a public key into the certificates table, comprising steps consisting of:**

receiving by the microcircuit a certificate of the public key to be inserted in the certificates table (i.e., Ishiguro teaches pre-storing a master public key on IC Card [col. 29, lines 25-27]), **and a public key from a certification entity that**

generated the certificate [col. 29, lines 25-27], the certificate comprising the public key to be added (i.e., pre-storing) **into the certificates table** (i.e. predetermine area, EEPROM) **and a digital signature** (i.e., master digital signature) **of the certification entity** [col. 29, lines 20-25], generated using a private key belonging to a pair of keys including the public key of the certification entity, **calculating by the microcircuit a digest form of the public key received from the certification entity** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]), **decrypting the digital signature using the public key received from the certification entity if the calculated digest form of the public key is located in the table** (i.e., Ishiguro teaches specific keys stored on the IC card used for decrypting various pieces of information [col. 29, lines 10-20]), **extracting the public key to be inserted from the certificate if the decrypted digital signature is correct, calculating a digest of the public key extracted from the certificate** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]), **and inserting the calculated digest in the certificates table** (i.e., public key pre-stored/ col. 29, lines 10-25).

However Ishiguro does not expressly teach:

and searching for the calculated digest form of the public key in the certificates table

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

and searching for the calculated digest form of the public key in the certificates table (to provide IC Card information management of secure storage [par. 56 – par. 57])

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of IC Card information management of secure storage disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 56 - par. 57].

5. As to claims 3 and 4, the system disclose by Ishiguro teaches substantial features of the claim invention (discussed above) it fails to disclose:

A method where the phase of inserting a public key in the certificates table comprises a step of inserting in the certificates table of a pointer to the digest of the public key of the certification entity that issued the certificate of the public key to be inserted, so as to define a certification tree in combination with the inserted digest of the public key (claim 3).

A method further comprising a phase of deleting a digest of a public key from the certificates table, comprising steps of deleting from the certificates table the digest of a public key to be removed, and deleting from the certificates table all digests of public keys associated with a pointer indicating the public key to be removed (claim 4).

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

A method where the phase of inserting a public key in the certificates table comprises a step of inserting in the certificates table of a pointer to the digest of the public key of the certification entity that issued the certificate of the public key to be inserted, so as to define a certification tree in combination with the inserted digest of the public key (claim 3) (to provide certificate inserting capability to a IC Card [par. 45]).

A method further comprising a phase of deleting a digest of a public key from the certificates table, comprising steps of deleting from the certificates table the digest of a public key to be removed, and deleting from the certificates table all digests of public keys associated with a pointer indicating the public key to be removed (claim 4) (to provide certificate deleting capability from a IC Card [par. 45]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of inserting and deleting certificate disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 45].

6. As to claim 5, Ishiguro teaches a **method where each public key digest entered into the certificates table is associated with a validity end date** (i.e., term of validity [col. 29, lines 10-20]), **the phase of inserting a public key into the certificates table further comprising steps of reading in a received certificate** (i.e., public key) a **validity end date** (i.e., term of validity [col. 29, lines 10-20]) **of the public key to be inserted** (i.e., public key pre-stored), **and entering the validity end date** (i.e., term of validity) **of the public key to be inserted into the certificates table** (i.e., tem of validity stored on the IC Card [col. 29, lines 10-20]), **together with the digest of the public key to be inserted** (i.e., pre-stored public key), **if it is earlier than the validity end date of the public key of the certification entity read in the certificates table** (i.e., Ishiguro teaches verifying the validity of signature containing the public key. Ishiguro teaches if valid performing read operation [col. 7, lines 35-45]).

7. As to claim 6, Ishiguro teaches a **method where each digest of a public key entered in the certificates table is associated with a usage counter** (i.e., term of validity) **that is incremented every time that a digital signature is checked using the public key** [i.e., use of public key/col. 31, lines 1-10] (i.e., Ishiguro teaches storing

term of validity information [col. 29, lines 15-20]. Ishiguro teaches a value for which a usage determination is made base on said value [col. 31, lines 5-20] Ishiguro teaches subtracting from available value subsequent of usage),

However Ishiguro does not expressly teach:

and said method comprising deletion of a public key digest from the certificates table when the usage counter is zero and the number of empty locations in the certificates table is less than a predetermined threshold.

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

and said method comprising deletion of a public key digest from the certificates table when the usage counter is zero and the number of empty locations in the certificates table is less than a predetermined threshold (to provide certificate deleting capability from a IC Card [par. 45]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of deleting certificate disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 45].

8. As to claim 7, Ishiguro teaches a **method where each public key digest entered into the certificates table is associated with a usage counter that is incremented every time that a digital signature is checked using the public key** [col. 31, lines 35-45], **and with a last usage date that is updated every time that the associated usage counter is incremented** [col. 31, lines 35-45] **(**(i.e., Ishiguro teaches storing term of validity information [col. 29, lines 15-20]. Ishiguro teaches a value for which a usage determination is made base on said value [col. 31, lines 5-20]. Ishiguro teaches subtracting from available value subsequent of usage),

However Ishiguro does not expressly teach:
said method further comprising a step to select a digest of a public key to be deleted as a function of the corresponding associated values of the usage counter and the last usage date when the number of empty locations in the certificates table is less than a predetermined threshold

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

said method further comprising a step to select a digest of a public key to be deleted as a function of the corresponding associated values of the usage counter and the last usage date when the number of empty locations in the

certificates table is less than a predetermined threshold (to provide IC Card information management of secure storage [par. 56 – par. 57]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of IC Card information management of secure storage disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 56 - par. 57].

9. As to claim 8, Ishiguro teaches a **method where the microcircuit uses a predefined hashing function to calculate the digest forms of the public keys** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]).

10. As to claim 9, Ishiguro teaches **a method further comprising a phase of inserting a root** (i.e., master) **public key in the certificates table** (i.e., Ishiguro teaches pre-storing a master public key on IC card [col. 29, lines 20-30]), **this insertion phase being done by a write processing controlled by a MAC calculated using a specific key in the microcircuit and only known to an entity having issued the microcircuit** (i.e., Ishiguro teaches a card dispenser which records initial information on to the IC card [col. 29, lines 20-25]).

11. As to claim 10, Ishiguro teaches **a method where the digest of a public key memorized in the certificates table is obtained by calculating a digest of the public key associated with other information such as the validity end date of the public key** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]),

However Ishiguro does not expressly teach:
identity information and serial numbers, this information being transmitted to the microcircuit every time that the signature is checked using the public key.

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

identity information and serial numbers, this information being transmitted to the microcircuit every time that the signature is checked using the public key (to provide certificate transmittal capability [par. 84]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of certificate transmittal disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 84].

12. As to claim 11, Ishiguro teaches **a method according to claim 1, wherein the digest of a public key memorized in the certificates table is obtained by calculating a digest of the certificate received by the microcircuit when the public key is inserted in the certificates table** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]),

However Ishiguro does not expressly teach:
this certificate being transmitted to the microcircuit every time that the signature is checked using the public key.

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

this certificate being transmitted to the microcircuit every time that the signature is checked using the public key (to provide certificate transmittal capability [par. 84]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of certificate transmittal disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 84].

13. As to claim 12, Ishiguro teaches a **method where the certificates table** (i.e., public key) **is stored in a secure memory area in the microcircuit** (i.e., Ishiguro teaches pre-storing a master public key on IC Card [col. 29, lines 25-27]).

14. As to claim 13, Ishiguro teaches a **microcircuit, designed to receive requests to check digital signatures from a data processing system, and to process these requests, a digital signature being generated using a private key only known to a signatory entity and associated with a public key, said microcircuit comprising**:

memory means for storing a certificates table containing a digest form of at least one public key (i.e., Ishiguro teaches pre-storing a master public key on IC Card [col. 29, lines 25-27]) , **means for receiving a digital signature to be checked and a public key in a pair of keys comprising a private key that was used to generate the digital signature to be checked** [col. 7, lines 35-40], **means for calculating a digest form of the received public key** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]),

and means for decrypting the digital signature using the received public key (i.e., specific keys) **if the calculated digest form of the public key is located in the certificates table** (i.e., Ishiguro teaches specific keys stored on the IC card used for decrypting various pieces of information [col. 29, lines 10-20]).

However Ishiguro does not expressly teach:

> **and for searching for the calculated digest form of the public key in the certificates table**

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

> **and for searching for the calculated digest form of the public key in the certificates table** (to provide IC Card information management of secure storage [par. 56 – par. 57])

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of IC Card information management of secure storage disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 56 - par. 57].

15. 14. (canceled)

16. As to claim 15, Ishiguro teaches a microcircuit further comprising:

means for receiving a certificate of the public key to be inserted in the certificates table (i.e., Ishiguro teaches a card dispenser records a initial information to the IC Card [col. 29, lines 20-25]), **and a public key from a certification entity that generated the certificate, the certificate comprising the public key to be added** (i.e., pre-stored on IC Card) **into the certificates table and a digital signature of the certification entity** (i.e., Ishiguro teaches a master public key and digital signature pre-stored on IC Card [col. 29, lines 20-20]), generated using a private key belonging to a pair of keys including the public key of the certification entity, **means for calculating a digest form of the public key received from the certification entity** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]), **means for decrypting the digital signature using the public key received from the certification entity if the calculated digest form of the public key is located in the table** (i.e., Ishiguro teaches specific keys stored on the IC card used for decrypting various pieces of information [col. 29, lines 10-20]), means for extracting the public key to be inserted from the certificate if the decrypted digital signature is correct, **means for calculating a digest of the public key extracted from the certificate** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a

predetermined condition for verification purposes [col. 2, lines 45-58]), and for inserting the calculated digest in the certificates table.

However Ishiguro does not expressly teach:

> **and for searching for the calculated digest form of the public key in the certificates table**

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

> **and for searching for the calculated digest form of the public key in the certificates table** (to provide IC Card information management of secure storage [par. 56 – par. 57])

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of IC Card information management of secure storage disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 56 - par. 57].

17. As to claims 16 and 17, the system disclose by Ishiguro teaches substantial features of the claim invention (discussed above) it fails to disclose:

> **A microcircuit further comprising means for inserting in the certificates table a pointer to the digest of the public key of the certification entity that**

issued the certificate of the public key to be inserted, so as to define a certification tree in combination with the inserted digest of the public key (claim 16).

A microcircuit further comprising means for deleting from the certificates table a digest of a public key to be removed, and means for deleting from the certificates table all digests of public keys associated with a pointer indicating the public key to be removed (claim 17).

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

A microcircuit further comprising means for inserting in the certificates table a pointer to the digest of the public key of the certification entity that issued the certificate of the public key to be inserted, so as to define a certification tree in combination with the inserted digest of the public key (claim 16) (to provide certificate inserting capability to a IC Card [par. 45]).

A microcircuit further comprising means for deleting from the certificates table a digest of a public key to be removed, and means for deleting from the certificates table all digests of public keys associated with a pointer indicating the public key to be removed (claim 17) (to provide certificate deleting capability from a IC Card [par. 45]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of inserting and deleting certificate disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 45].

18. As to claim 18, Ishiguro teaches a **microcircuit further comprising: means for reading in a received certificate a validity end date of a public key to be inserted** [col. 29, lines 20-25], **and means for entering the validity end date of the public key to be inserted into the certificates table** (i.e., tem of validity stored on the IC Card [col. 29, lines 10-20]), **together with the digest of the public key to be inserted** [col. 29, lines 20-30], **if the validity end date is earlier than the validity end date of the public key of the certification entity read in the certificates table** (i.e., Ishiguro teaches verifying the validity of signature containing the public key. Ishiguro teaches if valid performing read operation [col. 7, lines 35-45]).

19. As to claim 19, Ishiguro teaches a **microcircuit further comprising means for incrementing a usage counter associated with each public key digest entered into the certificates table, every time that a digital signature is checked using the public key** (i.e., Ishiguro teaches storing term of validity information [col. 29, lines 15-20]. Ishiguro teaches a value for which a usage determination is made base on

said value [col. 31, lines 5-20]. Ishiguro teaches subtracting from available value subsequent of usage),

However Ishiguro does not expressly teach:

and means for deleting a public key digest from the certificates table when the associated usage counter is zero and the number of empty locations in the certificates table is less than a predetermined threshold.

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

and means for deleting a public key digest from the certificates table when the associated usage counter is zero and the number of empty locations in the certificates table is less than a predetermined threshold (to provide certificate deleting capability from a IC Card [par. 45]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of deleting certificate disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 45].

20. As to claim 20, Ishiguro teaches a **microcircuit further comprising means for updating a last usage date associated with each public key digest entered into the certificates table, every time that a digital signature is checked using the public key** (i.e., Ishiguro teaches storing term of validity information [col. 29, lines 15-20]. Ishiguro teaches a value for which a usage determination is made base on said value [col. 31, lines 5-20]. Ishiguro teaches subtracting from available value subsequent of usage),

However Ishiguro does not expressly teach:

means for deleting a public key digest from the certificates table when the number of empty locations in the certificates table is less than a predetermined threshold, and means for selecting a digest of a public key to be deleted as a function of the corresponding associated values of the usage counter and the last usage date.

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

means for deleting a public key digest from the certificates table when the number of empty locations in the certificates table is less than a predetermined threshold (to provide certificate deleting capability from a IC Card [par. 45])**, and**

means for selecting a digest of a public key to be deleted as a function of the corresponding associated values of the usage counter and the last usage date (to provide IC Card information management of secure storage [par. 56 – par. 57]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of IC Card information management disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 56 – par. 57]).

21. As to claim 21, Ishiguro teaches a **microcircuit further comprising means for executing a predefined hashing function to calculate the digest forms of the public keys** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]).

22. As to claim 22, Ishiguro teaches a **method further comprising means for inserting a root (i.e., master) public key in the certificates table** (i.e., Ishiguro teaches pre-storing a master public key on IC card [col. 29, lines 20-30]), **using a write processing controlled by a MAC calculated using a specific key in the microcircuit and only known to an entity having issued the microcircuit** (i.e.,

Ishiguro teaches a card dispenser which records initial information on to the IC card [col. 29, lines 20-25]).

23. As to claim 23, Ishiguro teaches **a method where the means for calculating the digest of a public key memorized in the certificates table comprise means for calculating a digest of the public key associated with other information comprising the validity end date** (i.e., term of validity) **of the public key, identity information and serial numbers** (i.e., identification number), **this information being transmitted to the microcircuit** (i.e., IC terminal) **every time that the signature is checked** (i.e., signature checked by IC terminal) **using the public key** [claim 1, col. 30, lines 25-45].

24. As to claim 24, Ishiguro teaches a **method where the means for calculating the digest of a public key memorized in the certificates table comprise means for calculating a digest of the certificate received by the microcircuit when the public key is inserted in the certificates table,** (i.e., Ishiguro teaches the utilization of a computation method involving receiving a signature and key for a sender. Inputting the signature and key into a signature verification function. The computed results are compared with a predetermined condition for verification purposes [col. 2, lines 45-58]).

However Ishiguro does not expressly teach:
this certificate being transmitted to the microcircuit every time that the signature is checked using the public key.

However, these features are well known in the art and would have been an obvious modification of the system disclosed by Ishiguro as introduced by Barlow. Barlow discloses:

this certificate being transmitted to the microcircuit every time that the signature is checked using the public key (to provide certificate transmittal capability [par. 84]).

Therefore, given the teachings of Barlow, a person having ordinary skill in the art at the time of the invention would have recognized the desirability and advantage of modifying Ishiguro by employing the well known features of certificate transmittal disclosed above by Barlow, for which IC Card signature authentication will be enhanced [par. 84].

25. As to claim 25, Ishiguro teaches a **method according where the memory means for storing the certificates table** (i.e., public key) **is a secure memory area** (i.e., Ishiguro teaches pre-storing a master public key on IC Card [col. 29, lines 25-27]).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN WRIGHT whose telephone number is (571)270-3826. The examiner can normally be reached on 8:30 am - 5:30 pm Monday -Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AYAZ Sheikh can be reached on (571)272-3795. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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